

means for directing said at least one laser beam into said edge of said waveguide support; and

a charge couple device for detecting emission spectra of said biological molecules,

wherein said waveguide support is spatially situated between said light source and said charge couple device.

Claim 21. (Twice Amended) The device of claim 18, further comprising a cylindrical lens located between said light source and said waveguide support and moving perpendicular to the plane of said at least one laser beam,

wherein said cylindrical lens focuses said at least one laser beam into a shape smaller than said edge of said waveguide support to effect total internal reflection.

Claim 25. (Twice Amended) The device of claim 24, further comprising a transparent liquid located between said waveguide support and said optical prism, which possesses a refractive index about equal to the refractive indices possessed by said waveguide support and said optical prism,

wherein said transparent liquid directs said at least one laser beam into said edge of said waveguide support to effect total internal reflection.

31. (Amended) A method for performing an Arrayed Primer Extension (APEX) assay using the device of claim 30, comprising the steps of:

attaching oligonucleotide primers of a known sequence to said waveguide support,

hybridizing a polynucleotide of interest to said oligonucleotide primers to generate double-stranded oligonucleotides,

incubating said double-stranded oligonucleotides with a polymerase and four spectrally unique fluorescently-labeled terminating nucleotides to extend the primers into fluorescently-labeled nucleotides,

melting the polynucleotide of interest so that only the extended fluorescently-labeled nucleotides are located on the waveguide support,

washing the waveguide support to remove unincorporated fluorescent material,

placing the waveguide support between the light source and the charge couple device in the device of claim 30, and

detecting the emission from the fluorescent nucleotide with the charge couple device.

Attached hereto is a marked up version showing the changes made to the application by this Reply.